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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/569,475

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Haruyuki Makio

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BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

ASINOVSKY, OLGA

ART UNIT

PAPER NUMBER

1796

NOTIFICATION DATE

DELIVERY MODE

04/03/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/569,475	MAKIO ET AL.	
	Examiner	Art Unit	
	OLGA ASINOVSKY	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>03/27/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakagawa et al U.S. Patent 6,274,688 or Kennedy et al U.S. Patent 4,276,394. Nakagawa discloses functional groups-terminated vinyl polymers, wherein vinyl monomer(s) such as styrene, ethylene and propylene that may be used alone or may be copolymerized, column 5, lines 37 and 40; column 6, lines 1-15, for the present claims 1-2. The vinyl polymer can have Mw/Mn of less than 1.8 and most desirably not more than 1.3, column 4, lines 9 and 47, for the present claim 1. The terminal hydroxyl group bound to the main chain via an ether bond, an ester bond, a carbonate bond, column 6, lines 23-67. The resulting producing polymers can have both terminals of a main chain polymer wherein terminal groups include chlorine, bromine or iodine, or halogenated sulfonyl compound, column 8, lines 33-65. The functional group is readable in the present claim 1. The claimed invention is fully anticipated by the disclosure in Nakagawa' 688.

Kennedy discloses telechelic halogenated polymer having halogen unit on both terminals of main chain polymer having formula Cl-PIB-Cl, column 7, lines 1-7. The

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number average molecular weight is in the range from about 500 to about 50,000; and the molecular weight of a linear polyisobutylene is from 1,000 to 100,000, column 3, lines 53-58. The claimed molecular weight distribution from 1.0 to 1.5 can be identified in broad ranges of the number average molecular weight and the molecular weight of a linear polyisobutylene. The claimed invention is fully anticipated by the disclosure in Kennedy'394 invention.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-2 are rejected under 35 U.S.C. 102(e) as being anticipated by Sawaguchi U.S. Patent 7,125,834.

Sawaguchi discloses functionalized oligoolefin having functional groups at both ends thereof, column 13, lines 1-3; column 12, line 10 (formula 3); wherein the functional group is perfluoroalkyl group. An oligoolefin chain can be a telechelic oligomer, column 2, lines 62-67. Also, an oligoolefin can be functionalized with maleic acid at both ends or having amino group, column 21, lines 13-45. Example 2-1 at column 24 discloses oligopropylene containing –OH groups at both ends. Example of SD-PEO has Mw/Mn of 1.09, column 30, line 58. The claimed invention is fully anticipated by the telechelic oligoolefin having functional groups at both ends of said oligoolefin in the disclosure in Sawaguchi invention.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP02-036204 (hereinafter JP' 204) in view of Kennedy et al U.S. Patent 4,276,394. JP'204 discloses a process for producing a polyisobutylene having both ends terminal halogen unit, (page 2). The example, ClCH₂C₆H₄CH₂Cl is readable in the present claims.

JP' 204 does not disclose Mw/Mn in the claimed range of from 1.0 to 1.5.

Kennedy has been discussed in the paragraph 3 above. The number average molecular weight in the range from about 1,000 to about 50,000; and the molecular weight of a linear polyisobutylene is from 1,000 to 50,000 can be selected for producing telechelic polymer. Therefore, Mw/Mn being 1.0 is readable in the present claim 1.

Both references disclose analogous isobutylene-based polymer having terminal halogen unit on both ends of main chain polymer.

It would have been obvious to one of ordinary skill in the art to modify a process for producing halogen terminated polyisobutylene in JP'204, wherein a molecular weight distribution (Mw/Mn) is obtained by using analogous process by teaching in Kennedy invention because the polymer having a number average molecular weight in the range from about 1,000 to about 50,000; and the molecular weight of a linear polyisobutylene

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from 1,000 to 50,000 can be selected in Kennedy' 394, and, thereby, the molecular weight distribution (M_w/M_n) from at least 1.0 is obtained.

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sawaguchi U.S. Patent 7,125,834 as applied to claims 1-2 above, and further in view of Kioka et al U.S. Patent 5,939,495.

Sawaguchi has been discussed in the paragraph 4 above.

Sawaguchi does not disclose a polymerization catalyst containing a transition metal in the Groups IV to V, for the present claim 3.

Kioka discloses a process for producing polyolefin having functional group at its terminal. The polymerization process for obtaining the terminal-modified polyolefin is carried out in the presence of titanium catalyst such as titanium tetrachloride for being claimed transition metal in Group IV, column 3, lines 5-45.

It would have been obvious to one of ordinary skill in the art to modify a process for producing functionalized oligoolefin having functional groups at both ends of said oligoolefin in Sawaguchi invention by using a transition metal catalyst such as a titanium tetrachloride in Kioka invention for the purposes to easy conversion of a terminal group of the polyolefin to a functional group enables improving coating and adhering properties of the resulting polyolefin, Kioka, column 1, lines 10-16.

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References have been considered. The closest reference under X category to JP 02-036204 is considered above. Other two references to JP 64-011102 and JP-63-218704 cited under X-category, do not disclose both ends terminating polymer chain.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLGA ASINOVSKY whose telephone number is (571)272-1066. The examiner can normally be reached on 10:00 to 6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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O.A.

March 26, 2008

/Randy Gulakowski/

Supervisory Patent Examiner, Art Unit 1796